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CLOCKS

The Scent of Time

Writing on Communication in Africa, Leonard Doob observes: "The turban, the sword and nowadays the alarm clock are worn or carried to signify high rank." Presumably it will be rather long before the African will watch the clock in order to be punctual. Just as a great revolution in mathematics came when positional, tandem numbers were discovered (302 instead of 32, and so on), so great cultural changes occurred in the West when it was found possible to fix time as something that happens between two points. From this application of visual, abstract, and uniform units came our Western feeling for time as duration. From our division of time into uniform, visualizable units comes our sense of duration and our impatience when we cannot endure the delay between events. Such a sense of impatience, of time as duration, is unknown among non literate cultures. Just as work began with the division of labor, duration begins with the

division of time, and especially with those subdivisions by which mechanical clocks impose uniform succession on the time sense. As a piece of technology, the clock is a machine that produces uniform seconds, minutes, and hours on an assembly-line pattern. Processed in this uniform way, time is separated from the rhythms of human experience. The mechanical clock, in short, helps to create the image of a numerically quantified and mechanically powered universe. It was in the world of the medieval monasteries, with their need for a rule and for synchronized order to guide communal life, that the clock got started on its modern developments. Time measured not by the uniqueness of private experience but by abstract uniform units gradually pervades all sense life, much as does the technology of writing and printing. Not only work, but also eating and sleeping, came to accommodate themselves to the clock rather than to organic needs. As the pattern of arbitrary and uniform measurement of time extended itself across society, even clothing began to undergo annual alteration in a way convenient for industry. At that point, of course, mechanical measurement of time as a principle of applied knowledge joined forces with printing and assembly line as means of uniform fragmentation of processes.
The most integral and involving time sense imaginable is that expressed in the Chinese and Japanese cultures. Until the coming of the missionaries in the seventeenth century, and the introduction of the mechanical clocks, the Chinese and Japanese had for thousands of years measured time by graduations of incense. Not only the hours and days, but the seasons and zodiacal signs were simultaneously indicated by a succession of carefully ordered scents. The sense of smell, long considered the root of memory and the unifying basis of individuality, has come to the fore again in the experiments of Wilder Penfield. During brain surgery, electric probing of brain tissue revived many memories of the patients. These evocations were dominated and unified by

unique scents and odors that structured these past experiences. The sense of smell is not only the most subtle and delicate of the human senses; it is, also, the most iconic in that it involves the entire human sensorium more fully than any other sense. It is not surprising, therefore, that highly literate societies take steps to reduce or eliminate odors from the environment. B.O., the unique signature and declaration of human individuality, is a bad word in literate societies. It is far too involving for our habits of detachment and specialist attention. Societies that measured time scents would tend to be so cohesive and so profoundly unified as to resist every kind of change. Lewis Mumford has suggested that the clock preceded the printing press in order of influence on the mechanization of society. But Mumford takes no account of the phonetic alphabet as the technology that had made possible the visual and uniform fragmentation of time. Mumford, in fact, is unaware of the alphabet as the source of Western mechanism, just as he is unaware of mechanization as the translation of society from audile-tactile modes into visual values. Our new electric technology is organic and nonmechanical in tendency because it extends, not our eyes, but our central nervous systems as a planetary vesture. In the space-time world of electric technology, the older mechanical time begins to feel unacceptable, if only because it is uniform.

Modern linguistics studies are structural rather than literary, and owe much to the new possibilities of computers for translation. As soon as an entire language is examined as a unified system, strange pockets appear. Looking at the usage scale of English, Martin Joos has wittily designated "five clocks of style," or five different zones and independent cultural climates. Only one of these zones is the area of responsibility. This is the zone of homogeneity and uniformity that ink-browed Gutenberg rules as his domain. It is the style-zone of Standard English pervaded by Central Standard Time, and within this

zone the dwellers, as it were, may show varying degrees of punctuality.

Edward T. Hall in The Silent Language discusses how "Time Talks: American Accents," contrasting our time-sense with that of the Hopi Indians. Time for them is not a uniform succession or duration, but a pluralism of many kinds of things co-existing. "It is what happens when the corn matures or a sheep grows up. ... It is the natural process that takes place while living substance acts out its life drama." Therefore, as many kinds of time exist for them as there are kinds of life. This, also, is the kind of time-sense held by the modern physicist and scientist. They no longer try to contain events in time, but think of each thing as making its own time and its own space. Moreover, now that we live electrically in an instantaneous world, space and time interpenetrate each other totally in a space-time world. In the same way, the painter, since Cezanne, has recovered the plastic image by which all of the senses coexist in a unified pattern. Each object and each set of objects engenders its own unique space by the relations it has among others visually or musically. When this awareness recurred in the Western world, it was denounced as the merging of all things in a flux. We now realize that this anxiety was a natural literary and visual response to the new nonvisual technology.

J. Z. Young, in Doubt and Certainty in Science, explains how electricity is not something that is conveyed by or contained in anything, but is something that occurs when two or more bodies are in special positions. Our language derived from phonetic technology cannot cope with this new view of knowledge. We still talk of electric current "flowing," or we speak of the "discharge" of electric energy like the lineal firing of guns. But quite as much as with the esthetic magic of painterly power, "electricity is the condition we observe when there are certain spatial relations between things." The painter learns how to adjust relations among things to release new perception, and the chemist

and physicist learn how other relations release other kinds of power. Less and less, in the electric age, can we find any good reason for imposing the same set of relations on every kind of object or group of objects. Yet in the ancient world the only means of achieving power was getting a thousand slaves to act as one man. During the Middle Ages the communal clock extended by the bell permitted high coordination of the energies of small communities. In the Renaissance the clock combined with the uniform respectability of the new typography to extend the power of social organization almost to a national scale. By the nineteenth century it had provided a technology of cohesion that was inseparable from industry and transport, enabling an entire metropolis to act almost as an automaton. Now in the electric age of decentralized power and information we begin to chafe under the uniformity of clock-time. In this age of space-time we seek multiplicity, rather than repeatability, of rhythms. This is the difference between marching soldiers and ballet.

It is a necessary approach in understanding media and technology to realize that when the spell of the gimmick or an extension of our bodies is new, there comes narcosis or numbing to the newly amplified area. The complaints about clocks did not begin until the electric age had made their mechanical sort of time starkly incongruous. In our electric century the mechanical time-kept city looks like an aggregation of somnambulists and zombies, made familiar in the early part of T. S. Eliot's The Waste Land.

On a planet reduced to village size by new media, cities themselves appear quaint and odd, like archaic forms already overlaid with new patterns of culture. However, when mechanical clocks had been given great new force and practicality by mechanical writing, as printing was at first called, the response to the new time sense was very ambiguous and even mocking. Shakespeare's sonnets are full of the twin themes of immortality of

fame conferred by the engine of print, as well as **the petty futility** of daily existence as measured by the clock:

> When I doe count the clock that tels the time,
> And see the brave day sunck in hidious night. . .
> Then of thy beauty do I question make
> That thou among the wastes of time must goe.
> *(Sonnet X)*

In Macbeth, Shakespeare links the twin technologies of print and mechanical time in the familiar soliloquy, to manifest the disintegration of Macbeth's world:

> Tomorrow, and tomorrow, and tomorrow
> Creeps in this petty pace from day to day,
> To the last syllable of recorded time.

Time, as hacked into uniform successive bits by clock and print together, became a major theme of the Renaissance neurosis, inseparable from the new cult of precise measurement in the sciences. In Sonnet LX, Shakespeare puts mechanical time at the beginning, and the new engine of immortality **(print) at** the end:

> Like as the waves make towards the pibled shore,
> So do our minuites hasten to their end,
> Each changing place with that which goes before,
> In sequent toil all forwards do contend.
> And yet to times in hope, my verse shall stand
> Praising thy worth, dispight his cruell hand.

John Donne's poem on "The Sun Rising" exploits the contrast between aristocratic and bourgeois time. The one trait that most damned the bourgeoisie of the nineteenth century was their

punctuality, their pedantic devotion to mechanical-time and sequential order. As space-time flooded through the gates of awareness from the new electric technology, all mechanical observance became distasteful and even ridiculous. Donne had the same ironic sense of the irrelevance of clock-time, but pretended that in the kingdom of love even the great cosmic cycles of time were also petty aspects of the clock:

Busy old fool, unruly Sun,
Why dost thou thus
Through windows, and through curtains call on us?
Must to thy motions lovers' seasons run?
Saucy, pedantic wretch, go chide
Late school-boys, and sour prentices,
Co tell Court-huntsmen, that the King will **ride,**
Call country ants to harvest offices,
Love, all alike, no season knows nor clime,
Nor hours, days, months, which are the rags of time.

Much of Donne's twentieth-century vogue was due to his challenging the authority of the new Gutenberg age to invest him with the stigmata of uniform repeatable typography and with the motives of precise visual measurement. In like manner, Andrew Marvell's "To his Coy Mistress" was full of contempt for the new spirit of measurement and calculation of time and virtue:

Had we but world enough and time,
This coyness, lady, were no crime We would sit down and think which way
To walk, and pass our long love's day. . . .
An hundred years should go to praise
Thine eyes, and on thy forehead gaze;
Two hundred to adore each breast

But thirty thousand to the rest;
An age at least to every part,
And the last age should show your heart,
For lady, you deserve this state,
Nor would I love at lower rate.

Marvell merged the rates of exchange with the rates of praise suited to the conventional and fashionably fragmented outlook of his inamorata. For her box-office approach to reality, he substituted another time-structure, and a different model of perception. It is not unlike Hamlet's "Look on this picture and on that." Instead of a quiet bourgeois translation of the medieval love code into the language of the new middle-class tradesman, why not a Byronic caper to the farther shores of ideal love?

But at my back I always hear
Time's winged chariot hurrying near;
And yonder all before us lie
Deserts of vast eternity.

Here is the new lineal perspective that had come to painting with Gutenberg, but that had not entered the verbal universe until Milton's Paradise Lost. Even written language had resisted for two centuries the abstract visual order of lineal succession and vanishing point. The next age after Marvell, however, took to landscape poetry and the subordination of language to special visual effects.
But Marvell concluded his reverse strategy for the conquest of bourgeois clock-time with the observation

Thus, though we cannot make our sun
Stand still, yet we will make him run.

He proposed that his beloved and he should transform

themselves into a cannonball and fire themselves at the sun to make it run. Time can be defeated, as it were, by reversal of its characteristics if only it be speeded up enough. Experience of this fact awaited the electronic age, which found that instant speeds abolish time and space, and return man to an integral and primitive awareness.

Today not only clock-time, but the wheel itself, is obsolescent and is retracting into animal form under the impulse of greater and greater speeds. In the poem above, Andrew Marvell's intuition that clock-time could be defeated by speed was quite sound. At present the mechanical begins to yield to organic unity under conditions of electric speeds. Man now can look back at two or three thousand years of varying degrees of mechanization with full awareness of the mechanical as an interlude between two great organic periods of culture. In 1911 the Italian sculptor Boccioni said, "We are primitives of an unknown culture." Half a century later we know a bit more about the new culture of the electronic age, and that knowledge has lifted the mystery surrounding the machine.

As contrasted with the mere tool, the machine is an extension or outering of a process. The tool extends the fist, the nails, the teeth, the arm. The wheel extends the feet in rotation or sequential movement. Printing, the first complete mechanization of a handicraft, breaks up the movement of the hand into a series of discrete steps that are as repeatable as the wheel is rotary. From this analytic sequence came the assembly-line principle, but the assembly line is now obsolete in the electric age because synchronization is no longer sequential. By electric tapes, synchronization of any number of different acts can be simultaneous. Thus the mechanical principle of analysis in series has come to an end. Even the wheel has now come to an end in principle, although the mechanical stratum of our culture carries it still as part of an accumulated momentum, an archaic configuration.

The modern clock, mechanical in principle, embodied the

wheel. The clock has ceased to have its older meanings and functions. Plurality-of-times succeeds uniformity-of-time. Today it is only too easy to have dinner in New York and indigestion in Paris. Travelers also have the daily experience of being at one hour in a culture that is still 3000 B.C., and at the next hour in a culture that is 1900 A.D.. Most of North American life is, in its externals, conducted on nineteenth-century lines. Our inner experience, increasingly at variance with these mechanical patterns, is electric, inclusive, and mythic in mode. The mythic or iconic mode of awareness substitutes the multi-faceted for point-of-view.

Historians agree on the basic role of the clock in monastic life for the synchronization of human tasks. The acceptance of such fragmenting of life into minutes and hours was unthinkable, save in highly literate communities. Readiness to submit the human organism to the alien mode of mechanical time was as dependent upon literacy in the first Christian centuries as it is today. For the clock to dominate, there has to be the prior acceptance of the visual stress that is inseparable from phonetic literacy. Literacy is itself an abstract asceticism that prepares the way for endless patterns of privation in the human community. With universal literacy, time can take on the character of an enclosed or pictorial space that can be divided and subdivided. It can be filled-in. "My schedule is filled up." It can be kept free: "I have a free week next month." And as Sebastian de Grazia has shown in of Time, Work and Leisure, all the free time in the world is not leisure, because leisure accepts neither the division of labor that constitutes "work," nor the divisions of time that create "full time" and free time." Leisure excludes times as a container. Once time is mechanically or visually enclosed, divided, and filled, it is possible to use it more and more efficiently. Time can be transformed into a labor-saving machine, as Parkinson reveals in his famous "Parkinson's Law."

The student of the history of the clock will find that a totally

new principle entered with the invention of the mechanical clock. The earliest mechanical clocks had retained the old principle of the continuous action of the driving force, such as was used in the water clock and in the water wheel. It was about 1300 A.D. that the step was taken of momentarily interrupting rotary movement by a crown rod and balance wheel. This function was called "escapement" and was the means of literally translating the continuous force of the wheel into the visual principle of uniform but segmented succession. Escapement introduced the reciprocal reversing action of the hands in rotating a spindle forward and backward. The meeting in the mechanical clock of this ancient extension of hand movement with the forward rotary motion of the wheel was, in effect, the translation of hands into feet, and feet into hands. Perhaps no more difficult technological extension of interinvolved bodily appendages could be found. The source of the energy of the clock was thus separated from the hands, or the source of information, by technological translation. Escapement as a translation of one kind of wheel space into uniform and visual space is thus a direct anticipation of the infinitesimal calculus that translates any kind of space or movement into a uniform, continuous, and visual space.

Parkinson, sitting on the fence between the mechanical and the electric uses of work and time, is able to provide us with real entertainment by simply squinting, now with one eye, now with the other, at the time and work picture. Cultures like ours, poised at the point of transformation, engender both tragic and comic awareness in great abundance. It is the maximal interplay of diverse forms of perception and experience that makes great the cultures of the fifth century B.C., the sixteenth century, and the twentieth century. But few people have enjoyed living in these intense periods when all that ensures familiarity and security dissolves and is reconfigured in a few decades.

It was not the clock, but literacy reinforced by the clock, that

created abstract time and led men to eat, not when they were hungry, but when it was "time to eat." Lewis Mumford makes a telling observation when he says that the abstract mechanical time-sense of the Renaissance enabled men to live in the classical past, and to tear themselves out of their own present. Here again, it was the printing press that made possible the re-creation of the classic past by mass production of its literature and texts. The establishment of a mechanical and abstract time pattern soon extends itself to periodic alteration of clothing styles, much in the same way that mass production extends itself to periodic publication of newspapers and magazines. Today we take for granted that the job of Vogue magazine is to alter the dress styles as part of the process of its being printed at all. When a thing is current, it creates currency; fashion creates wealth by moving textiles and making them ever more current. This process we have seen at work in the section on "Money." Clocks are mechanical media that transform tasks and create new work and wealth by accelerating the pace of human association. By coordinating and accelerating human meetings and goings-on, clocks increase the sheer quantity of human exchange. It is not really incongruous, therefore, when Mumford associates "the clock and the printing press and the blast furnace" as the giant innovations of the Renaissance. The clock, as much as the blast furnace, speeded the melting of materials and the rise of smooth conformity in the contours of social life. Long before the industrial revolution of the later eighteenth century, people complained that society had become a "prose machine" that whisked them through life at a dizzy pace.

The clock dragged man out of the world of seasonal rhythms and recurrence, as effectively as the alphabet had released him from the magical resonance of the spoken word and the tribal trap. This dual translation of the individual out of the grip of Nature and out of the clutch of the tribe was not without its own penalties. But the return to Nature and the return to the tribe are

under electric conditions, fatally simple. We need beware of those who announce programs for restoring man to the original state and language of the race. These crusaders have never examined the role of media and technology in tossing man about from dimension to dimension. They are like the somnambulistic African chief with the alarm clock strapped to his back.

Mircea Eliade, professor of comparative religion, is unaware, in The Sacred and the Profane, that a "sacred" universe in his sense is one dominated by the spoken word and by auditory media. A "profane" universe, on the other hand, is one dominated by the visual sense. The clock and the alphabet, by hacking the universe into visual segments, ended the music of interrelation. The visual desacralizes the universe and produces the "nonreligious man of modern societies."

Historically, however, Eliade is useful in recounting how, before the age of the clock and the time-kept city, there was for tribal man a cosmic clock and a sacred time of the cosmogony itself. When tribal man wanted to build a city or a house, or cure an illness, he wound up the cosmic clock by an elaborate ritual reenactment or recitation of the original process of creation. Eliade mentions that in Fiji "the ceremony for installing a new ruler is called 'creation of the world.'" The same drama is enacted to help the growth of crops. Whereas modern man feels obligated to be punctual and conservative of time, tribal man bore the responsibility for keeping the cosmic clock supplied with energy. But electric or ecological man (man of the total field) can be expected to surpass the old tribal cosmic concern with the Africa within.

Primitive man lived in a much more tyrannical cosmic machine than Western literate man has ever invented. The world of the ear is more embracing and inclusive than that of the eye can ever be. The ear is hypersensitive. The eye is cool and detached. The ear turns man over to universal panic while the eye, extended by literacy and mechanical time, leaves some gaps and some islands free from the unremitting acoustic pressure and reverberation.